Surface modification of multi-walled carbon nanotube using double-chained quaternary ammonium bromide

ABSTRACT

Modification of multi-walled carbon nanotube (MWCNT) plays an important role to produce MWCNT crossbreeds that may be useful for exploration of new materials. In this report, characterization of dimethyl dioctadecylammonium bromide (DDOAB) modified multi-walled carbon nanotube (Mo-MWCNT) using Fourier Transform Infrared (FTIR) spectroscopy and Thermogravimetric analysis (TGA) and X-ray diffraction (XRD) is described. FTIR shows the presence of both aliphatic (CH stretching and CH bending) and ammonium (CN stretching) groups from DDOAB and the existence of C=C aromatic functional group from the structure of MWCNT in Mo-MWCNT spectra. This result was supported by TGA result which suggests that there are weight losses due to the degradation of DDOAB (between 250 °C to 500 °C) in the product. In addition, XRD pattern remain after modification suggesting attachment of MWCNT and DDOAB occurs at the surface of MWCNT.

Keyword: Multi-walled carbon nanotube; Surface modification; Surfactant